

100 West Monroe, Suite 300, Chicago, IL 60603



317369

December 3, 2008

Ms Margaret Kelley  
Burns and McDonnell  
1431 Opus Place Suite 400  
Downers Grove, IL 60515

Re: Peoples Energy Excavation on 6<sup>3</sup>70 North McClurg Court  
CDOE Permit Number: 88118740-3

Dear Ms Kelley

TN & Associates, Inc. (TN&A) was subcontracted by Burns and McDonnell, Inc. to conduct environmental health and safety radiological survey of the excavation conducted by Peoples Energy at 6<sup>3</sup>70 North McClurg Court, in the Streeterville neighborhood of Chicago, Illinois. The proposed work by Peoples Energy was to excavate an area near the gas main between the 600 and 700 block of North McClurg Court to disconnect an old 3-inch diameter gas line going into the building at 6<sup>3</sup>70 North McClurg Court. The proposed excavation was a 4 feet by 4 feet area at an approximate depth of 3 to 4 feet.

The instrument used by TN&A to conduct the radiological survey was a Ludlum 2221 scaler/ratemeter radiation monitor with a Ludlum 44-10 probe. The 44-10 probe is a 2"x 2" Sodium Iodide (NaI) probe which is recommended by US Environmental Protection Agency (US EPA) to measure the total gamma and beta radiation contamination or radioactivity. The instrument reads in counts per minute (cpm) which can be converted into units of disintegrations per minute (dpm) based on calibration certification. Natural and man-made radiation contamination is based on unstable atoms continuously going through decaying processes to become stable. The amount of decay or disintegration released can be measured in counts per minute from the instrument and the simple conversion is 1 cpm  $\approx$  10 dpm.

The instrument has an open window that reads all the measurable gamma and beta radiation. The manufacturers recommended conversion standard for exposure from cpm to micro Roentgen per hour ( $\mu$ R/hr) 1  $\mu$ R/hr for every 900 cpm. The instrument used during the survey was a Ludlum 2221 radiation monitor with serial number 169217 which was calibrated on July 29, 2008. The Ludlum 44-10 probe, serial number 207827 was calibrated on June 6, 2008 by Durateck Instrument Services with a known source and had an average calibrated conversion factor of 1  $\mu$ R/hr for every 909.9 cpm.

According to the Nuclear Regulatory Commission (NRC), personal radiation exposure should not exceed the non radiation worker limit of 100 milliroentgen equivalent man (mrem). Rem is the unit of human exposure and is a dose rate equivalent to roentgens with a correction factor.

For beta and gamma/x-ray, the correction factor is one and for alpha emitters inside the body, the correction factor is 20. Based on personnel exposure for non-radiation workers for an 8-hr day, the level is approximately 35  $\mu\text{rem/hr}$  or for naturally occurring for 365 day/24 hours per day the level is estimated at 0.85 mrem/day which is 35  $\mu\text{R/hr}$  to 50  $\mu\text{R/hr}$  based on exposure ranging from 250 to 350 mR per year should not be exceeded. Based on the previous activities and background information, Burns and McDonnell request that the proper notification to the US EPA be conducted if at anytime there is an unknown ascendance of twice background during the survey. TN&A follow the requested survey procedure generated by US EPA fact sheet "Before you Dig - Radioactive Thorium and Construction Activities in the Streeter Area". The US EPA, Region V Representative, Verneta Simon will be notified of any unknown ascendances during the survey.

### Background Survey

On November 26, 2008, TN&A conducted radiation background survey of the surrounding area prior to excavation. The initial weather condition during the survey was sunny with temperatures in the mid 40°F. TN&A surveyed the sidewalk and street around the area to collect the background readings at contact and at three feet above the ground. The highest background reading was 9,248 cpm (10.2  $\mu\text{R/hr}$ ) at three feet above the surface and 8,674 cpm (9.5  $\mu\text{R/hr}$ ) at contact with the sidewalk approximately 10 feet south of the area of concern. On McClurg Court, the direct readings were 8,400 cpm (9.2  $\mu\text{R/hr}$ ) and 8,270 cpm (9.1  $\mu\text{R/hr}$ ) at 3-feet above the concrete sidewalk.

### Excavation

On November 26, 2008, TN&A conducted radiation surveys of the excavation conducted by Peoples Energy to shut off the gas from 670 North McClurg Court. Peoples Energy marked 4-feet by 4-feet area on the sidewalk to be excavated by hand approximately 20 feet south of the southwest corner of McClurg Court and Erie Street. The area of concern is the main shutoff valve to the property. Peoples Energy initially broke up concrete using a jackhammer. The concrete was removed and place to the side. The area was surveyed prior to hand shoveling the area. The levels at contact were as high as 8,810 cpm (9.7  $\mu\text{R/hr}$ ).

Peoples Energy conducted the excavation using hand shovels. The sand and gravel material was placed directly south of the excavation and was surveyed with the Ludlum 2221 and the 44-10 probe. During the excavation at approximately 6 inches, rebar were needed to be cut and removed from the excavation. TN&A continued to survey the material being shoveled out of the excavation by Peoples Energy. At a depth of 1 to 2 feet, the survey reading of the excavated soil was as high as 9,010 cpm (10  $\mu\text{R/hr}$ ). The readings inside the excavation were similar.

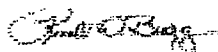
At a depth of 2 to 3 feet, the material removed was sand material. The radiological survey inside the excavation reached a peak of 10,600 cpm (11.6  $\mu\text{R/hr}$ ). The excavated sand survey ranged from 9,640 cpm (10.6  $\mu\text{R/hr}$ ) to 10,634 cpm (11.7  $\mu\text{R/hr}$ ). Peoples Energy completed the hand excavation of the area at a depth of 4 feet. The material excavated continued to be sand. The highest reading collected from the excavated sand material was 12,208 cpm (13.4  $\mu\text{R/hr}$ ). A

survey of the floor and along the walls of the excavation ranged from 8,874 cpm (9.8  $\mu$ R/hr) to 11,200 cpm (12.3  $\mu$ R/hr).

All the survey readings collected during Peoples Energy's excavation were below the two times background results. The background in the area of the excavation was 9,238 cpm or 10.2  $\mu$ R/hr which the action level was set at 18,476 cpm or 20.3  $\mu$ R/hr (twice background) using the Ludlum 2221 scaler/ratemeter and the Ludlum 44-10 probe.

If there are any questions or comments, please contact me by phone at (312) 220-7000 ext. 26 or through an e-mail at [rbugg@tnainc.com](mailto:rbugg@tnainc.com).

Sincerely,



Ronald W. Bugg  
Senior Industrial Hygienist

CC: Naren Prasad, Peoples Energy

William Murray, Burns and McDonnell  
Rebecca Bourn, Burns and McDonnell.